

CLAIMS

1. An exhaust purifying apparatus for an internal combustion engine, comprising:

- 5 an exhaust purifying member that is located in an exhaust passage of the internal combustion engine, wherein the exhaust purifying member traps particulate matter in exhaust gas;
- a fuel adding device for adding fuel to exhaust gas that passes through the exhaust purifying member; and
- 10 a setting section, wherein the setting section estimates a combustion rate of particulate matter in the exhaust purifying member in a state where the fuel adding device adds fuel to the exhaust gas, and wherein, based on the estimated combustion rate, the setting section sets a manner of adding
- 15 fuel by the fuel adding device.

2. An exhaust purifying apparatus for an internal combustion engine, comprising:

- an exhaust purifying catalyst that is located in an
- 20 exhaust passage of the internal combustion engine, wherein exhaust gas passes through the exhaust purifying catalyst;
- an exhaust purifying member that is located in a section of the exhaust passage that is downstream of the exhaust purifying catalyst, wherein the exhaust purifying member traps
- 25 particulate matter in exhaust gas;
- a fuel adding device for adding fuel to exhaust gas that passes through the exhaust purifying catalyst and the exhaust purifying member; and
- a setting section, wherein the setting section estimates
- 30 a combustion rate of particulate matter in the exhaust purifying member in a state where the fuel adding device adds fuel to the exhaust gas, and wherein, based on the estimated combustion rate, the setting section sets a manner of adding fuel by the fuel adding device.

3. The exhaust purifying apparatus according to claim 1 or 2, wherein the setting section switches the manner of adding fuel between a continuous fuel addition, in which fuel is continuously added to exhaust gas, and an intermittent fuel addition, in which fuel is intermittently added to exhaust gas.

4. The exhaust purifying apparatus according to claim 3, wherein, when it is assumed that the combustion rate of particulate matter is less than a predetermined rate, the setting section sets the manner of adding fuel to the intermittent fuel addition.

5. The apparatus according to claim 4, wherein, during the intermittent fuel addition, the setting section adds fuel to exhaust gas only a predetermined number of times.

6. The exhaust purifying apparatus according to claim 3, wherein, when it is assumed that the combustion rate of particulate matter exceeds a predetermined rate, the setting section sets the manner of adding fuel to the continuous fuel addition.

7. The exhaust purifying apparatus according to claim 3, wherein, when it is assumed that the combustion rate of particulate matter is less than a predetermined rate, the setting section sets the manner of adding fuel to the intermittent fuel addition, and wherein, when it is assumed that the combustion rate of particulate matter exceeds the predetermined rate, the setting section sets the manner of adding fuel to the continuous fuel addition.

8. The exhaust purifying apparatus according to any one of claims 1 to 7, wherein the setting section estimates the combustion rate of particulate matter based on an estimated

accumulation amount of particulate matter in the exhaust purifying member.

9. The exhaust purifying apparatus according to claim 8,
5 wherein the combustion rate of particulate matter estimated by the setting section is increased as the estimated accumulation amount becomes greater.

10. The exhaust purifying apparatus according to any one
10 of claims 1 to 7, wherein the setting section estimates the combustion rate of particulate matter based on a pressure difference between a section upstream and a section downstream of the exhaust purifying member.

15 11. The exhaust purifying apparatus according to claim 10, wherein the combustion rate of particulate matter estimated by the setting section is increased as the pressure difference becomes greater.

20 12. The exhaust purifying apparatus according to any one of claims 1 to 7, wherein the setting section estimates the combustion rate of particulate matter based on an estimated accumulation amount of particulate matter in the exhaust purifying member, and a pressure difference between a section
25 upstream and a section downstream of the exhaust purifying member.

13. The exhaust purifying apparatus according to any one of claims 1 to 7, wherein the setting section estimates the
30 combustion rate of particulate matter based on a ratio of a pressure difference between a section upstream and a section downstream of the exhaust purifying member to an intake air amount of the internal combustion engine.

35 14. The exhaust purifying apparatus according to any one

of claims 1 to 7, wherein the setting section estimates the combustion rate of particulate matter based on a difference between a temperature of exhaust gas that flows into the exhaust purifying member and a temperature of exhaust gas that
5 has passed through the exhaust purifying member.